Recommendations
to Reduce Pedestrian Collisions

Washington Quality Initiative's
Pedestrian Safety Improvement Team

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Introduction

The pedestrian/motor vehicle collision rate has been rising in Washington State. In 1996 alone, the societal costs of these collisions were over $450 million. Twelve to fifteen percent of all vehicle related fatalities involve pedestrians. Washington State Department of Transportation (WSDOT) spends less than 1 percent[1] of its safety budget to address identified pedestrian accident concerns. However, projects which correct these safety deficiencies can result in significant benefits to society by reducing the number of future pedestrian accidents, many of which prove to be fatal. To illustrate the severity of the problem, in Washington State between 1991-1995, pedestrian injury was one of four leading causes of traumatic death to children age 14 and under. Over 650 children were hospitalized for pedestrian injuries and more than 80 child pedestrians died. And in King County, pedestrian injury was the leading cause of unintentional injury death for 5 to 9-year-olds[2]. Several factors have contributed to this issue including:

- insufficient or nonexistent safe and accessible facilities for pedestrians;
- a lack of motorist and pedestrian regard for rules-of-the-road;
- minimal enforcement of pedestrian/motorist laws;
- urban sprawl land use patterns; and
- a lack of public understanding of how important walkability is to vibrant downtowns and the health of citizens.

At the same time, there is an increased demand for walking facilities. Communities are placing a renewed emphasis on "walkable" downtowns and recreational trails and a national effort is underway by the Center for Disease Control (CDC) to get Americans walking. In two recent reports put out by the CDC and the Surgeon General, a brisk walk 30 minutes a day, five days a week, leads to substantial increases in personal health. A health study which monitored 1,650 older Americans found that those individuals who walked two or more miles a day showed a 40 percent increase in longevity over those who walked less or not at all. In addition, the CDC is predicting an outbreak of Type II Diabetes among the generation of children currently in K-12 due to their inactivity levels. Young people traditionally have enjoyed personal mobility through walking or bicycling to places such as school, friends' homes, or community centers. However, changing land use patterns and growing traffic volumes contribute to unsafe walking environments.

Transit ridership is dependent on pedestrian customers. Unfortunately, the lack of safe pedestrian facilities and crossing opportunities along transit corridors contribute to a high number of pedestrian collisions in the vicinity of bus stops. And, transit will become an increasingly important transportation option as congestion levels increase in the urbanized regions of the state.

[1]Varies from year to year.
[2]Harborview Injury Prevention and Research Center.

Many local arterial streets are becoming increasingly congested. Street design and land use development contribute to this local congestion. At the same time, roadways have become wider, the distance between intersections longer, buildings are being set back across an expanse of asphalt parking lots, and streets are being designed without pedestrian facilities. It is no wonder that people will get in a car and drive across the street rather than face a hostile environment by trying to walk across the street. This has become a common phenomenon along many of the state's urban corridors. Not only has this created more congestion and greater reliance on making short auto trips (more vehicle miles traveled), but it also has set up an environment that spawns pedestrian/vehicle collisions.

In addition, 30 percent of the U.S. population will be over 50 years old by 2010. Many of these same older citizens will begin to experience a decrease in important driving skills; such as visual impairments, lack of depth perception, higher medication levels (drug impaired), and reduced reaction times. As people age, walking should become an important physical activity for health benefits, as well as an option to driving for short personal trips.

All of this highlights the need for a safer and more convenient pedestrian environment. Yet the very people who may depend most on walking are also currently the most at-risk to be involved in pedestrian collisions. Children under 15 have the highest injury rate, citizens over 65 have the highest fatality rates[3], and many of the highest pedestrian collision sites are adjacent to transit stops.

For these reasons, WSDOT, in collaboration with the Washington Traffic Safety Commission (WTSC), formed a Washington Quality Initiative (WQI) Pedestrian Safety Team to identify ways to reduce pedestrian collisions. The team was comprised of city, county, and state representatives from transportation engineering and planning, enforcement, transit, and licensing. Over an eight month period the team interviewed customers, toured various road designs, heard from judges, school bus drivers, public works, police and health care officials and reviewed extensive collision data.

This report is a recommended action plan developed by this multi-disciplinary team to reduce pedestrian/motor vehicle collision rates.

Team members included Director John Moffat and Dick Nuse, Washington Traffic Safety Commission (WTSC); Captain John Batiste, Washington State Patrol (WSP); Iris Cabrera, Kirkland Public Works; Megan Hall, Federal Highway Administration (FHWA); Jim Shanafelt and Brian Walsh, WSDOT Traffic Operations Office; Omar Meyhar, Transportation Improvement Board (TIB); Larry Hinson, WSDOT Design Office; Bob Vogel, Pierce County Public Works; Gary Lamberson, Department of Licensing (DOL); Pam Hughley, WSDOT Public Transportation and Rail Division; and Team Leader Julie Mercer Matlick, WSDOT Highways and Local Programs Service Center. Rick Mitchell, WSDOT's Northwest Region Design Office, officiated as the group's facilitator.

Kimberly Colburn from WSDOT recorded the team's progress.

[3]Washington State Pedestrian Collision Data, 1990-1995, Washington State Department of Transportation.

The team used a formal problem solving process for its work, called the Quality Blueprint process. This seven-step method allows teams to work on removing the obvious problems from a process so that the process becomes more consistent. The first step is to identify improvement opportunities (surveys, interviews, reviewing collision data); the second step is to identify key customers and suppliers (pedestrian groups such as transit riders, children, working adults); step three is to establish agreed upon requirements (what do you need from me?); in the fourth step, gaps are identified (for example, walking to a transit stop in the dark with no sidewalks); the fifth step is to describe and analyze the current process (develop a cause and effect diagram); step six develops and executes solutions (this document); and the last step is to measure and monitor the solutions (track the collision data after implementation to determine if collision rates are lowered).

The team reviewed extensive collision data and related research; interviewed pedestrian customers; was given expert input by judges, health care administrators, law enforcement professionals, and driver's licensing agents; conducted field trips to well and poorly designed pedestrian facility locations; and viewed a special enforcement program targeted at enforcing pedestrian crosswalk laws.

Several issues contributing to the pedestrian collision problem were identified[4]. However, the team needed to address those it felt were implementable, measurable, and would have the greatest impact on reducing pedestrian/vehicle collisions and changing motorists and pedestrian behavior. The three top priority causes are (not in ranked order):

- A Lack of Driver and Pedestrian Safety Education
- Not Enough Improvement Dollars for Pedestrian Issues
- Cities are Planned and Designed for Fast Movement of Vehicles, Not People

The solutions for these issues, contained within this report, will be presented to agencies and organizations with the ability to make changes in creating safer environments, administering enforcement programs, and developing educational programs. A demonstration site will be selected and the solutions tested at the site based on the recommendations of this report.

The following report is this expert team's recommendations to reduce pedestrian/motor vehicle collisions based on its comprehensive work.

[4]See Cause and Effect Diagram in Appendix.

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Cause and Effect Summary and Diagram

Pedestrian Collision Data

Child Pedestrian Injury (Article reprint from Childhood Injury Prevention Quarterly)

Quality Blueprint

1. Enhance Driver and Student Pedestrian Safety Education Programs

Solution Overview

One of the biggest problems facing pedestrian safety is a lack of awareness of the fundamentals of pedestrian safety. Pedestrian safety education should be a high priority in all school health and safety curricula at the elementary, middle school and high school levels. It should also be emphasized by insurance companies and in adult drivers' educational and safety programs such as 55 Alive and Evergreen Safety Council.

Objective/Performance Measure

Create higher awareness of pedestrian safety among drivers and pedestrians. Focus groups and public opinion surveys are tools for measuring the increase in knowledge and understanding of pedestrian safety and laws. Increasing materials available on the subject is another measure for increasing awareness.

Implementation Strategies

The Department of Licensing (DOL) and the Office of the Superintendent of Public Instruction (OSPI) should do an internal review of their driver education programs. This program curriculum needs to be expanded to include a section on pedestrian safety and the crosswalk laws. The course should be mandatory, as opposed to elective.

Pedestrian safety education and safe walk routes review should be a high priority in all school health and safety curricula at elementary and middle school levels. Appropriate pedestrian safety educational materials need to be made available to teachers. All schools should be encouraged to present pedestrian safety information to students within the first two months of each school year.

High school and private driver education training courses, and insurance companies, must increase emphasis on pedestrian safety and related rules of the road, such as what constitutes crosswalks to the public and insured members.

Subtasks

1. DOL needs to expand the current information on pedestrian safety in the Washington Driver's Guide. Additionally, the driver's written examination and driver's test should include more questions and emphasis relating to pedestrian and motorist interactions.
2. Defensive driving courses, adult driver's education courses, Evergreen Safety Council, 55 Alive, the AAA Inland Commercial Education Program, and insurance companies need to include and emphasize pedestrian safety.
3. Safety patrols, parent/teachers associations (PTAs), crosswalk guards, and bus drivers should be encouraged to reinforce safe pedestrian behaviors being taught in the school.

4. Efforts to translate pedestrian safety information into other languages is encouraged. Specific translations should be based on the needs of the community.
5. Events such as "Parents Walking Their Children to School Day" should be encouraged and coordinated with PTAs and/or the school pedestrian safety programs.

Resource Requirements

A staff person or personal service contract will be needed to develop the curriculum and accompanying materials for use by teachers. There will be costs associated with the printing and distributing of these materials.

Schedule

Short Term — DOL, OSPI, the Evergreen Safety Council, and AAA Inland Education Program review driver education curriculum; mandate inclusion of pedestrian safety.

Long Term — Assessment of the programs' effectiveness.

2. Strengthen Law Enforcement's and Judicial Officials' Knowledge of Pedestrian Laws and Issues

Solution Overview

Nothing contributes more to the day-to-day safety of pedestrians than strong enforcement of traffic laws. The support of traffic laws has been proven to save lives. Law enforcement officers not only apprehend and deter violators, but also have an opportunity to educate drivers and pedestrians on their responsibilities. However, pedestrian traffic enforcement is not the sole responsibility of the officer. To make the walking environment safer, policy makers, enforcement agencies, and judicial systems need to take a stronger role when enforcing pedestrian issues.

Objective/Performance Measure

Increase enforcement of pedestrian traffic safety laws. Drivers should be a primary target of this effort since they are operating the device that creates the hazard and are subject to government control. Pedestrian misconduct should also be cited. One performance measure is to survey law enforcement personnel's knowledge of pedestrian laws before and after solution implementation. Another measure is the number of additional training hours law enforcement officers receive on pedestrian laws and safety.

Implementation Strategies

The safety of pedestrians is made more difficult by a lack of awareness and commitment among both traffic officers and law enforcement administrators. The Criminal Justice Training Commission (CJTC) should develop a pedestrian component for its satellite training. A survey of law enforcement personnel's knowledge of pedestrian laws should be done. The Washington State Patrol (WSP) should include a pedestrian safety instructional block to all troopers during in-service or decentralized training. The Washington Traffic Safety Commission (WTSC) should develop an In-Service Training Level module and a 15 to 20-minute video on pedestrian safety.

The judicial system should ensure that pedestrian law infractions are dealt with in the same manner as any other traffic infraction. Leniency by courts toward drivers who violate pedestrian traffic laws tends to undermine pedestrian safety enforcement efforts.

Subtasks

1. An In-Service training program and pedestrian safety video should be developed.
2. A short component concerning intoxicated pedestrians should be added to the present alcohol server training program put on by the Washington Liquor Control Board.
3. Educate judicial practitioners on pedestrian laws and issues.
4. An enforcement team should develop a standard pedestrian reporting form.

5. The Redmond Police Department's Pedestrian Sting Program should be used as a model for other agencies when considering a pedestrian law enforcement campaign.

Resource Requirements

To encourage local law enforcement agencies to implement pedestrian safety enforcement programs, WTSC should provide overtime funding for agencies that participate in a program. WTSC should also collaborate with the Washington State Liquor Control Board in preparing the alcohol server training and with the CJTC in producing in-service training. Pedestrian safety programs should become a routine part of enforcement programs.

Schedule

Short Term — WSP include a pedestrian safety instructional block to all troopers during in-service or decentralized training; Criminal Justice Training Commission develop a pedestrian component for its satellite training.

Long Term — Data on high pedestrian injury and fatality locations needs to be collected. This information needs to be conveyed to the locals.

3. Develop Pedestrian Safety Information Campaign

Solution Overview

Washington needs to educate the general public about the severity and nature of the pedestrian safety problem. This is needed both to gain public backing and support, and to increase the public's perception of the value of walking as transportation. A campaign should include elementary, middle, and high schools; colleges; transit riders/providers; and areas with the highest incidence of pedestrian problems. The campaign must be age appropriate and model correct pedestrian and driving behavior. It should be part of a total statewide pedestrian safety program and tie in with such things as driver's education, college campus orientation/registration, elderly driver's education, and vehicle registration.

Objective/Performance Measure

Increase public awareness of the pedestrian safety problem. To measure this solution, public opinion polls should be conducted.

Implementation Strategies

WTSC needs to develop a comprehensive pedestrian safety public information campaign using the Cooper Jones legislative direction. By educating the general public about the severity of Washington's pedestrian safety problem and offering implementable solutions, pedestrian safety will improve based on other safety-related educational efforts such as WSDOT's "Give 'Em A Brake" campaign.

As more facilities are built and people learn safe driving and walking skills, the concept of walking as beneficial for health reasons, for reducing single-occupant vehicle trips, and for meeting clean air and environmental policies should be encouraged. The general public needs to be made aware of the importance of reducing automobile dependency. This can be partially achieved by the increased use of walking for transportation and increasing safety for transit riders.

Subtasks

1. WSDOT and WTSC shall take the lead to develop and coordinate a statewide mass media pedestrian safety campaign. This can be modeled after the "Give 'Em A Brake" campaign.
2. WSDOT and WTSC must work collectively to develop a pedestrian safety video that can be used at DOL offices and for other presentations.
3. WSDOT and WTSC needs to seek partnerships, sponsors for funding sources, and marketing outlets such as industries involved with walking or health care. Appropriate groups include: HMO's, insurance companies, environmental groups, shoe and athletic apparel companies, PTA and volunteer groups, and alcoholic beverage companies.
4. WSDOT, WTSC, and OSPI should implement pedestrian safety messages for schools.

5. These messages need to be age appropriate. They should be part of a total statewide pedestrian safety program and tie-in with such things as driver education, college campus orientation, senior driver refresher courses, and vehicle registration.

Resource Requirements

Funds will be needed to develop and coordinate a statewide media campaign. Additionally, there will be costs associated with development of a pedestrian safety video. The cost of the public information campaign will depend on the extent to which radio and TV is used and the cost of air time.

Schedule

Short Term — WTSC and WSDOT will take the lead, create an advisory committee to develop a comprehensive public information campaign plan.

Long Term — Assess the effectiveness of a comprehensive pedestrian safety public information campaign.

4. Encourage and Support Pedestrian Safety Groups

Solution Overview

One way to encourage local pedestrian safety programs is to develop or foster local pedestrian safety groups. These groups provide the necessary political clout to ensure that pedestrian issues are brought to the forefront at the city and county decision making level.

Objective/Performance Measure

Increase the number of regional or local pedestrian safety groups in the state of Washington.

Implementation Strategies

WTSC and WSDOT will continue to provide support to local pedestrian safety groups. A model needs to be developed that can be used by localized community groups to help them in their formation. Two ways to implement this strategy currently exist: FHWA's Pedestrian Safety Roadshows and the National Highway Traffic Safety Administration's (NHTSA) Safe Communities local task forces.

Subtasks

1. Initiate FHWA pedestrian road shows.
2. Create touring pedestrian safety program.
3. Develop Safe Communities local task force.

Resource Requirements

WTSC and WSDOT will need to continue to budget funds for support of local pedestrian safety groups.

Schedule Term

Short Term — Get the word out that Pedestrian Roadshows and Safe Community models exist for communities to establish pedestrian safety groups.

Long Term — Support and assist community pedestrian group efforts. Create touring pedestrian safety program.

Safety Education Summary

Enhance Driver and Pedestrian Safety Education					
Action Items	**Objective**	**Lead Agency**	**Team Person**	**Timeframe**	**Completed**
1. Enhance Driver and Student Pedestrian Safety Education Programs	Create higher pedestrian safety awareness	DOL, OSPI	Nuse	1 year	
2. Strengthen Law Enforcement's and Judicial Officials' Knowledge of Pedestrian Laws and Issues	Increase enforcement of pedestrian traffic safety laws	WTSC, WSP, CJTC	Batiste, Moffat	1 year	
3. Develop Pedestrian Safety Education Information Campaign	Increase public's awareness of pedestrian safety	WSDOT, WTSC, DOL, OSPI	Nuse, Matlick	18 months	
4. Encourage and Support Pedestrian Safety Groups	Increase the number of pedestrian safety groups	WTSC, WSDOT	Nuse, Matlick	ongoing	

AWC — Association of Washington Cities

CJTC — Criminal Justice Training Center

CTED — Washington State Department of Community, Trade and Economic Development

DOL — Department of Licensing

FHWA — Federal Highway Administration

OSPI — Office of Superintendent of Public Instruction

TIB — Transportation Improvement Board

WSAC — Washington State Association of Counties

WSDOT — Washington State Department of Transportation

WSP — Washington State Patrol

WTSC — Washington Traffic Safety Commission

1. Incorporate Comprehensive Pedestrian Guidelines Into State and Local Agency Design Standards

Solution Overview

Project planning and development follow a set of procedures based on defining deficiencies in the design of existing highways and streets. A slightly modified form of this procedure is also used in determining the desired design levels for new construction. The primary emphasis in roadway projects has been the movement of motorized vehicles. Design manuals and standards provide direction for assessing the needs of vehicles from traffic lane widths to anticipated delays at signalized intersections. In sharp contrast, few design standards are provided to determine when or where pedestrian features should be considered. Without this information, cost estimates and funding decisions are made to construct facilities that do not include pedestrian facilities. Design standards and guidance on anticipating pedestrian demand should be included in the same documents used to project funding needs.

Objective/Performance Measure

Specify minimum design standards that must be addressed at the planning and development stages of projects. The performance measure will be inclusion of comprehensive pedestrian design standards into state and local design manuals.

Implementation Strategies

Include pedestrian designs and requirements in current design manuals.

A team approach, with representatives from WSDOT, Association of Washington Cities (AWC), County Road Administration Board (CRAB), Sound Transit, Federal Transit Administration (FTA), local agencies, and the Federal Highway Administration (FHWA) would offer the broadest experience range to evaluate and develop these standards.

Subtasks

1. Develop benefit/cost analysis for pedestrian needs
2. Evaluate the current design guidance contained in existing manuals including TCRP Report 19 Guidelines for the Location and Design of Bus Stops; identify deficiencies or conflicts, and review other out-of-state resources.
3. Identify gaps in road and street design, particularly suburban and built-up areas, where pedestrian standards may be appropriate.
4. Design guidance developed by the team should have a formal review by a number of different user groups.
5. Determine on a case-by-case basis allowable deviations from standards.
6. Incorporate pedestrian needs in Road Safety Audits.

Resource Requirements

Done within existing processes and resources, part of doing business.

Schedule

Short Term — WSDOT Design Office provides guidance in their ***Design Manual*** with input from the team.

Long Term — WSDOT Highways and Local Programs needs to take the lead in developing local agency design guidelines and coordinate dissemination of information.

2. Prioritize and Fund Pedestrian Facilities in Transit Corridors

Solution Overview

Currently, pedestrian facilities in transit corridors are often overlooked by transportation agencies. Transit providers and transportation agencies should identify pedestrian deficiencies and program/fund projects in transit corridors, to enhance safety and access. Transit plans and local, state, and regional transportation plans must be amended to include and give high priority to these projects. Several funding sources, including dedicated Transit Enhancement[5] funds, currently exist which can be partnered to fund pedestrian projects in transit corridors. In addition, the Bicycle Transportation and Pedestrian Walkways provisions of Section 217 of Title 23, as amended by TEA-21[6], describe how federal-aid funds may be used for pedestrian projects.

Objective/Performance Measure

To provide safe and convenient pedestrian facilities for transit riders. A second objective is for affected agencies, such as local transit providers and local and state transportation agencies, to prioritize, partner, program, and fund pedestrian projects to mitigate unsafe walking conditions in transit corridors. Specific performance measures include project tracking and accident data to evaluate changes in vehicle/pedestrian collisions. A long-term performance measure is reducing the number of deficient pedestrian routes and links between transit stops, ultimately reducing the number of pedestrian collisions adjacent to such stops.

Implementation Strategies

An awareness of the severity of the pedestrian collision problem needs to be heightened among transportation agencies and transit providers. Deficient pedestrian facilities need to be identified by local agencies in transit corridors, projects need to be ranked, funding partnerships developed and projects funded.

Subtasks

1. Increase affected agencies awareness of pedestrian safety issue in transit corridors, including funding entities such as TIB and Legislative Transportation Committee (LTC). Awareness tools include WSDOT Highways and Local Programs homepage and funding workshops, WSDOT's pedestrian homepage, and other outreach efforts.
2. Create team to work with funding agencies to create priority criteria for pedestrian safety projects, including WSDOT Program Management and local agencies' public works directors.
3. Local agencies identify pedestrian deficiencies in transit corridors.

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[5]TEA-21 Transit Enhancements requires urbanized areas with populations over 200,000 to spend 1 percent of urban area formula funds for transit enhancements — pedestrian access and walkways are considered an eligible activity.

[6]The Federal Transportation Efficiency Act for the 21st Century (federal transportation funding).

4. WSDOT Highways and Local Programs, and Public Transportation and Rail, the Public Transit Association in cooperation with WQI Pedestrian Safety Team, create ***Local Agency Guidelines (LAG) Manual*** and WSDOT ***Design Manual*** guidelines for safe pedestrian facilities in transit corridors, and training sessions.

Schedule

Short Term — Awareness of problem heightened, deficiencies identified, prioritized and funded.

Long Term — Funding partnership model created, ***LAG Manual*** and WSDOT ***Design Manual*** Guidelines developed.

3. Raise Pedestrian Enforcement Programs Funding through Citations and Other Sources

Solution Overview

Nothing contributes more to the day-to-day safety of pedestrians than strong and consistent enforcement of traffic laws. Law enforcement officers not only apprehend and deter violators, but also have an opportunity to educate drivers and pedestrians on their responsibilities. Law enforcement agencies need the motivation and tools to aggressively enforce pedestrian laws.

Objective/Performance Measure

Enhance pedestrian safety enforcement programs through citation funds, and/or other funding incentive mechanisms. The performance measure will be increasing the current dollars allocated for pedestrian safety enforcement efforts.

Implementation Strategies

Using the Speeding-In-School Zones legislation as a model, WTSC should promote passage of legislation that would double the monetary penalty (fine) for a violation of any pedestrian traffic safety law. Further, this legislation should provide that half the doubled fine go to the WTSC for purposes of improving pedestrian safety statewide. WTSC should also identify other funding mechanisms to provide enforcement incentive dollars to police agencies.

Subtasks

1. WTSC should establish performance-based grant criteria for law enforcement agencies based on a written plan. The enforcement plan would be an agency's commitment to conduct active enforcement of pedestrian laws and demonstrated commitment to issue citations. Based on that commitment, police agencies would be awarded funds from the pool of money generated by doubling fines to purchase material and equipment, and to pay overtime to enhance pedestrian safety.
2. WTSC research other potential pedestrian enforcement program funding sources.
3. Using Redmond Police Department's "pedestrian sting operation" as a model, law enforcement agencies can create an awareness of pedestrian safety issues on the part of motorists and pedestrians.
4. A public information campaign can be developed around the doubling of fines and the sting operation.

Resource Requirements

The pedestrian and bicycle program manager at WTSC would be responsible for tracking the law enforcement grants.

Schedule

Short Term — Passage of legislation.

Long Term — WTSC performance based criteria, establishment of grant program.

4. Clarify Statutory Responsibility for Building Sidewalks on State Routes

Solution Overview

At the state level, WSDOT, in most of its regions, relies on a maintenance statute which states that cities greater than 22,500 population are responsible for the operation of the roadway, and roadside improvements behind the face of curb (sidewalks). Consequently, WSDOT may or may not assume responsibility for sidewalk construction. The local or county government may interpret the ownership of a WSDOT roadway as WSDOT's responsibility. State statute (RCW 35.68) gives cities and towns the option of either assuming sidewalk construction and maintenance expense, or requiring property owners to do this. Often residential properties may be owned by persons who do not reside at the property, and do not feel the need to build sidewalks for benefit not realized by themselves. Consequently, as urban areas have been built up, often no sidewalks have been built.

Objective/Performance Measure

Clarify responsible agency for sidewalk construction within jurisdictional boundaries.

Implementation Strategy

Research should be conducted on how other state DOTs, such as Oregon and North Carolina, provide for pedestrian facilities. Then, based on a team recommendation, statutory authority should be clarified, particularly for those roadways owned by the state.

Subtasks

1. A team should be formed to research other states' policies, review current WSDOT procedures, statutes and existing documentation (Attorney General interpretations), and develop consistent policy for all state WSDOT regions. Representatives from the Association of Cities and the Association of Washington Counties should participate in this team.
2. Develop and submit recommendations to appropriate governing bodies.

5. Develop Pedestrian Improvement Account Based on Development Mitigation Fees or Project Percent Contribution

Solution Overview

Under State Environmental Protection Act (SEPA), jurisdictions have the ability to require mitigation of the traffic impacts associated with proposed developments. Many jurisdictions have chosen to set up impact fee systems to collect traffic impacts mitigation. However, the cost of non-motorized facilities is not included in the determination of impact fee rates since they are not considered capacity improvements. Consequently, jurisdictions cannot fund pedestrian improvements with development impacts fees and have to rely either on grants or on their own funds.

One way to increase pedestrian improvement funding is for jurisdictions to set up a central fund for those improvements based on developer contributions. The question is, though, do jurisdictions have legal authority to collect other than impact/mitigation fees from developers? The answer to this question will determine whether or not other options may need to be considered. Potential options may include voluntary contributions, dedication and/or donations, or entering into partnerships with developers (Solution # 6) so that they can voluntarily contribute to the proposed fund or directly fund specific pedestrian improvements. Another option would be to request that the public benefit improvements required from PUDs (Planned Urban Developments) be extended to other types of developments, and be specifically targeted for pedestrian improvements.

Objective/Performance Measure

Increase private developers participation in the funding of pedestrian improvements.

Implementation Strategies

Is this solution feasible? A multi-jurisdictional team needs to consult with legal departments about the legal issues or the jurisdictions' legal authority to request private developers to contribute toward the funding of pedestrian improvements. Normally developers are only required to comply with existing facility standards and to mitigate their traffic impacts. Existing facility standards should be reviewed to incorporate pedestrian considerations.

Perhaps the operative term should be "voluntary;" that is, the proposed central fund should be based on voluntary contributions.

Subtasks (Assuming That This Solution is Legally Feasible)

1. Team research in-state and out-of-state past and/or existing funding practices similar to the proposed central fund. Summarize findings and determine what elements/procedures could be applied/adjusted to fit jurisdictions' needs.
2. Develop proposed central fund ordinance stating purpose, legal basis and mechanism for developers participation. Include local agency outreach. Mechanisms may include:
    - Direct proportionate contributions based on size of proposed developments.
    - Tie non-motorized facilities benefits with reduced vehicle trips.

- Dedication and/or donations.
- Partnerships (local government/developers) that would jointly fund specific pedestrian improvements located in the vicinity of the proposed development.
- Application of the concept of Public Benefit Improvement to various types of development not only to PUDs (Planned Urban Developments).

3. Jurisdictions prepare a prioritized list (in Non-motorized Plan) of proposed pedestrian improvements, costs, geographic location map.
4. Publicize successful efforts through newsletters, officially recognize participant developers and prepare an annual report on how the central fund is being used.

Schedule

Short Term — Staff research time, review existing facility standards, draft ordinance; possibly legal consultant help.

Long Term — Ordinance approval and implementation.

6. Encourage and Develop Pedestrian Improvement Public/Private Partnerships

Solution Overview

Traditionally, pedestrian improvements have been funded with public dollars (local, state, federal). However, these funds have not met pedestrian improvement needs and should be increased for safety reasons. One effective way is through the formation of private and public partnerships. At the local level, partnership members may include developers, school districts, downtown merchant associations and businesses, and local governments. Longer term, state and national level partnerships may include corporations (oil companies, automobile makers, AAA, Insurance Companies) and agencies such as DOTs, Traffic Safety agencies, and State Police.

One example of a past successful partnership was between WTSC and AAA. Both of these organizations jointly hosted events to recognize individuals, organizations, and jurisdictions who made special efforts toward improving pedestrian safety. Other examples include the partnership between Parent Teacher Student Associations (PTSAs), agencies and local businesses to fund pedestrian safety outreach activities, and developers and jurisdictions jointly funding pedestrian improvements at, or adjacent to, development sites.

Objective/Performance Measure

Increase private participation in the funding of pedestrian improvements.

Implementation Strategies

Task forces (local/state level) combined with agencies/jurisdictions representatives shall identify potential private partnership members, and define appropriate mechanisms for the formation of the partnerships.

Subtasks

1. Review existing or past examples of successful partnerships to learn how they work, and whether they can be applied or modified to fit specific needs.
2. Identify potential partnership members at the local, state, and national level.
3. Organize and implement outreach activities such as meetings and open houses to raise awareness among the potential partners about the benefits of providing pedestrian-friendly environment/facilities, and the need to share the cost of implementing them.
4. Disseminate information on how to form private/public partnerships at training events, annual pedestrian safety conferences or livable community fairs, and through magazines and publications.
5. Research potential revenue raising strategies that could be implemented through private/public partnerships such as:
    - Development mitigation fee, dedications.
    - Neighborhood matching funds for new sidewalks or to provide sidewalk continuity.

- Business Districts Tax allocation for pedestrian improvements at downtown, commercial areas.
- Corporate donations.

Resources

Time and materials required to organize task force, conduct research, prepare, disseminate information, organize and implement outreach activities.

Schedule

Short Term — Task force organized, research conducted.

Long Term — Implement outreach/disseminate information.

Summary

Target Funding on Pedestrian Needs					
Action Items	**Objective**	**Lead Agency**	**Team Person**	**Timeframe**	**Completed**
1. Incorporate Comprehensive Pedestrian Guidelines into State and Local Agency Design Standards	Specify minimum design standards	WSDOT	Hinson, Matlick	18 months	
2. Dedicate Funds for Pedestrian Facilities in Transit Corridors	Provide safe and convenient pedestrian facilities for transit riders	WSDOT PT/Rail ?		18 months	
3. Support Pedestrian Enforcement Program Funding through Citations	Enhance pedestrian safety enforcement programs through citation funds	WTSC	Moffat, Nuse	24 months	
4. Clarify Statutory Responsibility for Building Sidewalks on State Routes	Clarify responsible agency for sidewalk construction within jurisdictional limits	WSDOT	Hammond, Rickman	24 months	
5. Develop Pedestrian Improvement Account Based on Development Mitigation Fees or Project % Contribution	Increase private developers participation in funding pedestrian improvements	CTED, AWC	Cabrera	18 months	
6. Encourage and Develop Pedestrian Improvement Public/ Private Partnerships	Increase private participation in funding pedestrian improvements	AWC, WSAC	Vogel	12 months	

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WSDOT — Washington State Department of Transportation

WSP — Washington State Patrol

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1. Establish Stronger Pedestrian Design Linkages Between Transportation Engineering, Land Use Planning, and Public Transportation

Solution Overview

Traditionally, transportation engineers have been in charge of planning, designing, operating, and maintaining transportation facilities. Since most of these facilities are primarily intended for automobile use, they generally haven't incorporated/ accommodated pedestrian needs. Often existing facilities are perceived as "unsafe" and "inconvenient." In other cases, activity centers lack pedestrian facilities altogether and/or their existing pedestrian facilities are poorly connected to other transportation modes.

The problem does not have easy answers or solutions. One approach is to establish stronger linkages between transportation engineering and the land use planning process. This is the planning level that future needs are anticipated. Transportation implications of land use planning decisions need to be clearly understood, and vice-versa, to establish a well defined process for land use planning and public transportation engineers and land use planners to work together to achieve a common goal. For pedestrian needs, the goal should be to plan, design, and implement pedestrian-friendly environments/facilities that provide safe and convenient alternatives to the automobile.

Objective/Performance Measure

Improve the process by which pedestrian friendly environments/facilities are planned, designed and implemented. The main goal of this process is to provide safe and convenient pedestrian access.

Implementation Strategies

Successful examples of pedestrian friendly environments and facilities are the result of careful and deliberate planning, design, and implementation processes by multi-disciplinary groups. It is necessary to understand how these processes work, what their key elements and procedures are, what roles engineers and planners play in them, and how all the elements work together.

Subtasks

1. Provide training opportunities and develop college curricula for both engineers and planners via WSDOT, UW, the statewide bicycle and pedestrian conference, or ITE, emphasizing the following:
    - Land use planning — what kinds of land use mix and densities have the potential to generate more foot traffic.
    - Specific urban land use design elements that encourage pedestrian traffic (block size, street width, sidewalk width, surface treatments, parking, access and circulation).

- Types of transportation facilities and/or improvements required to serve foot traffic.
- How to improve existing auto-oriented facilities to accommodate foot traffic, safely and conveniently.
- How to listen to the users or beneficiaries of the system and how to incorporate their inputs.
- How to achieve connectivity among different modes (transit, park and ride, transit centers, pedestrian walkways, bikeways) to maximize safety and convenience.
- Establish a "step-by-step" procedure for the planning, design, and implementation of pedestrian environment and/or facilities. It should have clearly stated guiding principles/goals and incorporate land use and transportation elements.
- Include how to achieve connectivity among activity centers (via adequate pedestrian facilities) to encourage foot traffic, to undertake the planning, design, and implementation process of pedestrian facilities and or environments.
- Review existing procedures for ideas on how to adjust, organize, and implement them to fit specific needs of jurisdictions and/or communities.
- Assign to either a multi-agency team or consultant company, or to both.

2. Encourage jurisdictions, including school districts to develop and implement non-motorized transportation plans.
    - Remove or avoid impediments to pedestrian mobility needs.
    - Educate school districts on benefits of walking and bicycling trips cost reductions over bussing and parent vehicle trips.
    - Counties and jurisdictions that exceed certain population thresholds are required to develop comprehensive plans including transportation and land use elements. Many jurisdictions, however, do not have a non-motorized component — or not comprehensive enough, within their transportation elements.
    - Developing and implementing non-motorized plans provides opportunities for planners and engineers (from PW, Planning and Park/Recreation Departments, consultant firms) to work together and coordinate long-range planning of different elements including land use, sidewalks, and other pedestrian facilities, and bike facilities. There are already several examples of good non-motorized plans that could be used as models by those jurisdictions that have not yet undertaken this type of effort.

3. Encourage jurisdictions to "pedestrianize" their neighborhood plans during periodical plan updates.
   - Provide information on traffic calming techniques.
   - Neighborhood plans are among the broad range of measures necessary to implement the comprehensive plans. Updating these plans provides opportunities to address, in a coordinated way, issues relevant to land use, urban design, and transportation facilities including pedestrian and other non-motorized facilities. Neighborhood plans provide an opportunity to achieve pedestrian-friendly environments at the neighborhood level via coordinated efforts from planners, engineers, architects, and neighborhoods associations.
4. A multi-agency team led by WSDOT and the Department of Community, Trade, and Economic Development (CTED) should be formed to deal with Subtasks #2 and #3. A review of successful non-motorized plans should be conducted. A summary of good ideas and/or findings about them should be disseminated at annual conferences (Pedestrian Safety, Livable Communities) or at other similar training events.

Schedule

Short Term — Multi-agency team formed by WSDOT and CTED.

Long Term — Training course developed for planners and engineers; step-by-step procedure manual; update comprehensive and neighborhood plans.

2. Develop Design Guidelines Manual/Tool Kit

Solution Overview

For the last half century, the primary mode of transportation has been the private automobile. This has, in large part, been a natural evolution brought on by the demise of public transportation and unparalleled population growth in the suburban areas. Designers, engineers, and even city planners focus their attention on moving vehicles in and out of cities in the most efficient manner possible. Highway design guidelines, even at the national level, as well as civil engineering courses at colleges, provide little direction in creating acceptable environments for pedestrians. Without emphasis on pedestrian considerations, this mode of transportation will become more unsafe as traffic volumes increase. Without strong design guidelines, conditions along our roadways will deteriorate to a point where other modes of travel will become unsafe.

Objective / Performance Measure

Include pedestrian needs and concerns in the developmental stages of highway and street design. The performance measure will be a formally endorsed and adopted manual for pedestrian facilities.

Implementation Strategies

The objective can be achieved with a pedestrian facility design manual, filling the void in transportation design manuals and agency guidelines. This can be accomplished by modifying current manuals or developing companion volumes.

A team approach, including local agencies, WSDOT, and the FHWA, would offer the broadest experience range to evaluate and develop pedestrian facility design guidelines. In addition, best pedestrian design awards should be given to jurisdictions, design firms or individuals that make concerted efforts to create better environments for pedestrians. Statewide competition will encourage more emphasis on pedestrian design.

Subtasks

1. Evaluate the present design guidance contained in existing manuals, identify deficiencies or conflicts, and review other out-of-state resources.
2. Identify the most appropriate document, either as a modification to an in-place manual or a new book, and incorporate or develop the design standards needed.
3. Team design guidance receive formal review by different user groups.
4. Explore alternate ways of conveying the information including as a self-explanatory booklet, a tutorial video or CD training aid or a formal training course with classroom type instruction
5. Develop college course on pedestrian design.

Resource Requirements

Staff time and materials, printing costs to revise existing manuals, visual aids and technical writing, and a training program.

Schedule

Short Term — WSDOT Design Office provides guidance in ***Design Manual*** with input from the team.

Long Term — WSDOT Design Office takes the lead in developing design guidelines and a companion training program.

3. Assess Pedestrian Safety Along Transit Corridors, Modify Deficient Facilities

Solution Overview

A significant number of pedestrian collisions occur at or near bus stops. People who use school buses and transit need safe avenues for foot, or mobility device, travel to and from bus stops. They also need safe locations to wait for transportation. Creating a better environment for pedestrians to use transit and school buses will encourage ridership. A tremendous amount of pedestrian activity occurs around both transit forms: people who are dependent on walking to and from home and the bus stop. The lack of safe pedestrian access on many of the state's urban arterials was caused in part by a lack of coordination between traffic engineers/planners, transit service providers, and city or county planners. Many of WSDOT's Pedestrian Accident Locations (PALs) on state routes are adjacent to bus stops which often lack basic pedestrian amenities such as sidewalks.

There is no clear assignment of responsibility for bus stop design standards, locations, maintenance, accessibility, or liability. Driver behavior, pedestrian behavior, and a lack of safe and accessible walking environments for transit pedestrians contribute to collisions. A team of bus stop stakeholders should develop a pedestrian safety model for assessing current transit corridors and locating future safe and cost-effective bus stops in transit corridors.

Objective/Performance Measure

Reduce the number of pedestrian collisions occurring adjacent to transit stops.

Implementation Strategies

The public transportation industry, combined with transportation infrastructure providers need to provide leadership in the development of a model or checklist to assess pedestrian safety in transit corridors. The model/checklist team should include transit providers, traffic engineers, land use planners, school district transportation or safety representatives, and pedestrian customers. Trade-offs between transit operational needs, customer needs (such as pedestrians not walking very far and taking the most direct route possible), and vehicular traffic needs should be discussed. This model will provide jurisdictions with an understanding of the relationship between transit stops, roadway conditions (such as average daily traffic, speed, and roadway geometrics), pedestrian travel behaviors and amenity needs, and pedestrian generators and attractors.

The generic model/checklist should then be distributed statewide. In addition, a training program should be developed to teach staff how to use the checklist when assessing pedestrian safety. A mini conference on pedestrian collision issues, at or adjacent to existing and future bus stops could be convened. All stakeholders including agencies, committees, teams, jurisdictions, legislators, emergency responders, medical treatment suppliers, enforcers, representatives of the elderly and disabled, and educators should be invited. This forum should provide the foundation for accessibility and maintenance responsibility, liability assignment, decision making and funding identification.

Subtasks

1. Assess current practices such as Pierce Transit's inventory of all midblock transit stop locations. Other relevant practices would include WSDOT's ***Pedestrian Facilities Guidebook***, Metro or Seattle's current practices, and others as identified.
2. WSDOT research relationship between pedestrian collisions and transit stops, target high incident locations as priority projects.
3. Develop a method to inventory transit corridors and stops in relation to roadway classification, intersection spacing and traffic volumes (higher volume roadways generate higher numbers of pedestrian accidents), including who to contact for data.
4. Create a "how to" find transit and school bus ridership numbers for corridors. Establish a ranking method for highest need routes.
5. Include a "how to" for locating pedestrian collision data.
6. Checklist or model should include a summary of pedestrian travel behavior.
7. Customer needs should be identified and include lighting, shelters, sidewalks or walkways, safety, placement of stops in relationship to generators and attractors.
8. Include a recommended set of safe design practices for crosswalks and midblock crossings, provisions for raised medians or refuge islands, bus shelter designs, lighting, sidewalks, sight distances, far side/near side discussions, in-lane and pullout designs.
9. Develop a training program to teach traffic professionals, transit providers, and school districts how to use the pedestrian safety transit/bus stop audit, model, or checklist.
10. Evaluate the checklist to determine if it's user friendly and meets the needs of the user. Evaluate if transit agencies and transportation professionals review bus stop locations for pedestrian safety after the checklist has been in circulation for one year.
11. Convene a Bus Stop Pedestrian Collision Reduction Mini-conference to disseminate model and provide a forum for developing responsibility for accessibility and maintenance responsibility, liability assignment, decision making, and funding identification.

Resource Requirements

Resources include a multi-agency team and a staff person to develop model/ checklist. Funds for the Bus Stop Pedestrian Collision mini-conference should be allocated by transit providers and transportation agencies.

Schedule

Short Term — WSDOT, WTSA, and other stakeholders create expert team. Staff collects data and information, develops checklist. Conference or workshop be developed.

Long Term — Agencies begin inventorying and assessing transit and bus stops for pedestrian safety. Retrofits are made at problem locations.

4. Require All Roadway Projects to Address Pedestrian Facilities

Solution Overview

The linkability of pedestrian facilities is crucial to pedestrian safety and mobility. Current practice does not always address pedestrian accommodation when a roadway is built or reconstructed. In other cases where pedestrian accommodation is addressed for an individual property being improved, adjacent properties may not have a pedestrian facility and won't be required to build one. This creates gaps in the system. These situations increase the likelihood that pedestrian crashes will increase in this area. Pedestrian collisions often occur when pedestrians share an unimproved roadway with motor vehicles.

Objective/Performance Measures

Identify missing pedestrian links, prioritize gaps, and construct missing links.

Implementation Strategies

Agencies, primarily on shared jurisdictional roadways, need to place a priority on requiring the building of pedestrian facilities when new construction or improvements occur. A priority list should be established where gaps occur. Agencies need to commit to building pedestrian facilities (where safety risks have been assessed) rather than wait for build-out or improvement of a property sometime in the distant future.

The same method should be used for crossing locations and the degree of engineering that would be needed. Grade-separated or at-grade types of crossings would need to be determined by a engineering assessment based on volumes (pedestrian and vehicles), speeds, gaps, existing crossing locations and crash history. A priority list should be developed by each agency within its area of jurisdiction. Missing links should be listed and prioritized on a variety of factors including: risk as it is associated with vehicle ADT, speeds, pedestrian volume (actual or predicted), existing geometrics, and crash history. Reliance on crash history alone should not be the defining factor on prioritization.

Subtasks

1. Develop strategies for closing gaps (deficiencies).
2. Encourage TIB to add points for projects that close gaps, discourage parking within 20 feet of intersections and crosswalks, and create a list of cost-effective improvements for pedestrian accident corridors or locations.
3. Educate public works and traffic engineers on pedestrian needs within existing relationships between agencies and the community. This would be an informal process; for example, a task of WSDOT project offices when presenting a project to the public. Requirement would be a site review by a pedestrian expert to assess need and scope of pedestrian facility to be built.
4. Jurisdictions compile list of priority locations, include projects in local, regional, and/or statewide transportation plans, and set a goal each funding cycle to complete a number of pedestrian projects (built to the appropriate standard).

5. Require upgrade of pedestrian facilities when rebuilding roads or improving adjacent properties. A Revised Code of Washington (RCW) or Washington Administrative Code (WAC) may be needed.

Schedule

Short Term — Agencies identify deficiencies, prioritize and incorporate into transportation plans. Consider road safety audit checklists as a model for subject checklists.

Long Term — Build missing gap projects. Create law to affect roadway considerations for pedestrians and use mitigation fees for those improvements.

5. Develop Demonstration Project(s)

Solution Overview

Several pedestrian high-accident locations and corridors have been identified by WSDOT. The societal costs of these collisions in 1996 were over $450 million. Knowledge exists in roadway design and traffic operations, enforcement programs, and educational programs to reduce pedestrian collision rates. WSDOT[7] should apply these programs and designs to a known high-accident corridor or spot as a limited demonstration project. Collision data can be tracked before and after the application to demonstrate the effectiveness of a targeted approach. If the demonstration is successful, the application can then be used by other agencies around the state to reduce these collisions.

Objective/Performance Measure

Target a known high collision area, and through a collaborative education, enforcement, and engineering effort with the local agencies and community action groups, reduce collisions at a specific location. The performance measure is to reduce the number of collisions, using a formula that accounts for the number of transit riders, collisions, and average daily traffic before and after the test.

Implementation Strategies

WSDOT should set aside funding to test solutions developed by the WQI Pedestrian Safety Team on a state route. The roadway section should be in an area where community or local agency support for a pedestrian safety project is known to exist. A steering team comprised of the three Es[8], along with other relevant groups will oversee the project, with WSDOT as the lead. This team will help develop and shape the public education and outreach campaign targeted at effected user groups and provide consultant guidance. and pedestrian safety improvements will be constructed.

Subtasks

1. Community Steering Team members identified. Members to include WSDOT (design, traffic operations, and pedestrian program), local agency, health care representation, transit, school district, enforcement, media, seniors, pedestrian user groups.
2. Consultant retained with expertise in community outreach, education, and public involvement.
3. Analyze collision data to identify types of collisions occurring, age groups, specific sites (i.e., are they occurring adjacent to transit stops), times of day and year, and motorist actions. Baseline developed to monitor changes. In addition, current average daily traffic numbers and transit ridership numbers should be tracked to correlate with changes in collisions. If possible, pedestrian trips should also be measured.

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[7]Washington State Pedestrian Collision Data 1990-1995 WSDOT.
[8]Engineering Education Enforcement.

4. Depending on age categories or user groups represented in collisions (i.e., young drivers, senior pedestrians) a specific education effort should be developed. This could include targeted pedestrian safety effort with Driver's Education in the area, classroom pedestrian safety programs, outreach to seniors, outreach effort with alcohol serving establishments, and/or a transit rider safety outreach effort. A pedestrian safety video should be developed[9]. Teach a pedestrian safety roadshow.
5. Training should be given to local law enforcement on pedestrian laws, and experimental pedestrian police enforcement tactics.
6. Based on pedestrian collision areas, or observed pedestrian trips (as identified by community), roadway right of way section or transit stops should be improved to implement safer access for pedestrians. This could include lighting, crossing improvements, sidewalks, access control, medians, or safety refuge islands. Long-term projects should also be identified for construction as funding becomes available.
7. Site should be monitored for at least two years to analyze collision rates.

Resource Requirements

Funding for a demonstration project, lead agency staff time, consultant with public education and involvement expertise, collision data for most recent years available, local agency staff time for coordination, transit rider boardings and deboardings data, camcorder to tape roadway sections, enforcement expertise and training, potential local agency construction match dollars.

Schedule

Short Term — Secure funding, create local oversight committee, hire consultant, analyze data, develop education and enforcement components.

Long Term — Construct pedestrian safety improvement, monitor change in collision data.

[9]See Cause 1, Solution 6.

Summary

Land Use Planners and Transportation Providers Give Equal Consideration to Pedestrian Mobility and Safety Needs					
Action Items	**Objective**	**Lead Agency**	**Team Person**	**Timeframe**	**Completed**
1. Establish Stronger Pedestrian Design Linkages between Transportation Engineering, Land Use Planning, and Public Transportation	Improve process in which pedestrian facilities are planned, designed, implemented	WSDOT , FHWA	Hall, Matlick	18 months	
2. Develop Design Guideline Manual(s)/ Toolkit	Include pedestrian needs into highway and street design	WSDOT	Hinson	12 months	
3. Assess Pedestrian Safety Along Transit Corridors, Modify Deficient Facilities	Reduce the number of pedestrian collisions occurring adjacent to transit stops	WSDOT PT/Rail ?		12 months	
4. Require All Roadway Projects Address Pedestrian Facilities	Identify deficiencies, prioritize, construct	TIB, AWC, WAC	Meyhar	12 months	
5. Develop Demonstration Projects	Implement demonstration project to "test" recommendations	WSDOT	Matlick	18 months	

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Appendix

WQI Pedestrian Collision Team
Cause and Effect Diagram Summary
October 20, 1998

The top three "Most Probable Causes" for the "Effect Statement" "Number of Pedestrian/Vehicular Collisions Crossing Roadways" are as follows:

1. Lack of driver and pedestrian education — received 8 votes
2. Not enough spent on pedestrian issues — received 7 votes
3. Our cities are planned and designed for fast movement of vehicles not people — received 7 votes

The rest of the probable causes that received votes are:

- Roadway design focused on moving vehicles almost exclusively — received 6 votes
- No law that says you have to build pedestrian facilities — received 5 votes
- Lack of funding to improve the system — received 3 votes
- Lack of enforcement people — received 3 votes
- Lack of Access Management — received 3 votes
- Use of alcohol by drivers and pedestrians — received 2 votes
- Cost/Benefit not developed for pedestrian facilities — received 2 votes
- Poor behavioral decisions by pedestrians and motorists — received 2 votes
- Lack of pedestrian considerations in roadway designs — received 2 votes
- Lack of marketing of awareness of pedestrian issues — received 1 vote
- Traffic laws and rules are not obeyed by motorists or pedestrians — received 1 vote
- Bus stops are not integrated with crossings — received 1 vote
- Highways have become too wide — received 1 vote
- People are not alert to the consequences of the collisions, i.e.; medical, economic, grief, community livability, etc. — received 1 vote

The next step would be to start with the first most probable cause and develop a list of possible ways to fix the problem. Then test it to see if it would work. If test data showed it was successful, then would present to the process owners for adoption.

This list was modified as the team decided to reprioritize top three choices at this meeting.